



## Development and Sensory Evaluation of Cookies Using Grape Seed

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### ABSTRACT

*The present study was conducted to prepare the grape seed powder fortified cookies. Cookies prepared without adding formulated grape seed powder were kept as control. The organoleptic properties of the experimental cookies like colour, appearance, flavour, Crispiness, taste and over all acceptability were evaluated sensorily and recorded highest score compared to the plain cookies served as control.*

**KEYWORDS :** Grape seed, Oligomeric proanthocyanidin complexes.

### INTRODUCTION

A grape is a fruiting berry of the deciduous woody vines of the botanical genus *Vitis*. Grapes can be eaten raw or they can be used for making wine, jam, juice, jelly, grape seed extract, raisins, vinegar, grape seed oil and grape seed incorporated foods. Grapes are a non-climacteric type of fruit, generally occurring in clusters. Grapes are a type of fruit that grow in clusters of 15 to 300, and can be crimson, black, dark blue, yellow, green, orange and pink. White grapes are actually green in color, and are evolutionarily derived from the purple grape. Mutations in two regulatory genes of white grapes turn off production of anthocyanins, which are responsible for the color of purple grapes. Anthocyanins and other pigment chemicals of the larger family of polyphenols in purple grapes are responsible for the varying shades of purple in red wines. Grapes are typically an ellipsoid shape resembling a prolate spheroid (Walker A.R. et al., 2007).

Grapes (*Vitis vinifera*) have been heralded for their medicinal and nutritional value for thousands of years. Egyptians ate grapes at least 6,000 years ago, and several ancient Greek philosophers praised the healing power of grapes usually in the form of wine. European folk healers made an ointment from the sap of grapevines to treat skin and eye diseases. Grape leaves were used to stop bleeding, inflammation, and pain, such as the kind brought on by hemorrhoids. Unripe grapes were used to treat sore throats, and dried grapes (raisins) were used for constipation and thirst. (Noguera E., et al., 2005).

Round, ripe, sweet grapes were used to treat a range of health problems including cancer, cholera, smallpox, nausea, eye infections, and skin, kidney, and liver diseases. But grapes or the chemicals within them, especially oligomeric proanthocyanidin complexes (OPCs) have been touted as powerful antioxidants. Some people believe they could help treat a number of conditions, from heart disease to cancer to aging skin, although scientific evidence is mostly lacking for those conditions. However, there is good evidence that grape seed extract can help treat chronic venous insufficiency and edema. (Anastasiadi M., 2009).

Whole grape seeds are naturally rich in flavonoids including gallic acid, catechin, epicatechin, gallo catechin, epigallocatechin, epicatechin 3-O-gallate, and perhaps most importantly, oligomeric proanthocyanidins. According to research, the antioxidant capacity of proanthocyanidins is 20 times greater than vitamin E and 50 times greater than vitamin C. In addition, proanthocyanidins have been shown to enhance the effectiveness of other antioxidants. As probably already know, antioxidants can help improve your health in many ways. They can protect your body from signs of premature aging, including saggy and wrinkled skin, poor cardiovascular health, and deteriorating vision. Sufficient levels of antioxidants are also of utmost importance to anyone following a diet plan for acne-free skin or an anti-asthma diet plan, and they may provide protection against psoriasis, rosacea, and joint inflammation associated with rheumatoid arthritis (Atsushi sano, et al., 2013).

The proanthocyanidins in grape seeds have been shown to improve blood circulation by strengthening capillaries, arteries, and veins. One double-blind, placebo-controlled, crossover clinical study also found grape seed reducing leg swelling in women during prolonged sitting. But the vascular benefits of grape seeds appear to extend beyond potentially providing relief to women with varicose veins. Numerous studies have been conducted to evaluate the potential benefits of grape seed on cardiovascular health in humans, and the results have been promising. Grape seed has been shown, for example to reduce the scale of a heart attack, control tachycardia (an abnormally fast resting heart rate), provide protection against cardiotoxicity caused by the drug doxorubicin, reduce biomarkers of early stage atherosclerosis, and reduce oxidized LDL cholesterol levels (Bagchi D, et al., 2003).

Although researchers caution that it is too early to draw conclusions about the potential of grape seeds to reduce cancer risk in humans in vitro and in vivo research conducted to date has found grape seed extracts (particularly proanthocyanidins extracted from grape seeds) to possess anti-cancer properties. In one animal test using mice, these extracts were shown to provide protection against UV-induced photocarcinogenesis by reducing tumor incidence, tumor multiplicity, and tumor size, and by preventing the transformation of UVB-induced papillomas to malignant carcinomas. These anti-cancer effects against UV-induced photocarcinogenesis have been largely attributed to the strong

antioxidant properties of proanthocyanidins. In another study grape seed proanthocyanidins were found to reduce azoxymethane-induced colon carcinogenesis in mice by inducing apoptosis. Apoptosis, or programmed cell death is the body's natural way of getting rid of damaged or useless cells, but this mechanism is typically faulty in cancer cells allowing them to multiply in an uncontrolled manner (Santosh K. et al., 2013).

### MATERIALS AND METHODS

The grape seed were selected and research powdered for the grape seed were cleaned and dried in sun light further it was shallow fried in order to subside the raw aroma.

#### Treatment Details

The treatment for preparation of grape seed powder fortified cookies were as follows.

The formulated grape seed powder was incorporated into the cookies in the ratio 1:5 initially a dough mixture was made with all the ingredients such as refined flour, sugar powder, vegetable fat, egg and vanilla essence. The mixture together to form smooth dough use the hands to roll the dough into walnut-size balls and place them slightly apart on a baking tray flatten them slightly and back in the oven for 180° 13 to 15 minutes or until they are a light golden brown and slightly firm on top carefully transfer the cookies to a wire rack to cool. Sensory evaluation

of grape seed powder cookies were carried out among the semi- trained and untrained panel judges of fifteen number in each group including the post graduate nutrition students of mother Teresa women's university. The cookies were placed for organoleptic evaluation. The specific sensory characteristic of cookies viz, firmness, size, crispiness, surface adhesiveness granularitiy chewiness with out other general characteristics viz colour, size, taste and over all acceptability were evaluated using a rating scale adapted from the book of(Hoo G.G., 2010). The mean scores given by fifteen judges were used for statistical analysis.

**RESULTS AND DISCUSSION**

The organoleptic properties of cookies were evaluated visually palpators (firmness size, surface adhesiveness), gustatory (chewiness, granularity, taste, colour), olfactory and over all acceptability. The statistical analyses of the data were depicted in the table 1. The data reveals that there were significant differences at all level of 1% significance among the control and experimental cookies. The highest scores were recorded for the experimental cookies in all the quality attributes such as the high scores for aroma (9.5) surface adhesiveness (9) was recorded for grape seed powder incorporated cookies which was on par with the control cookies of lowest scores for aroma (8) and surface adhesiveness (7.5) respectively. The highest score of 10 was recorded for experimental cookies which was on par with the control cookies with low score 8.

**CONCLUSION**

As seen earlier grape seed being a rich source of polyphenols help the body fight aging effect of free radicals grape seed also provides a concentrated source of one of the most beneficial group of plant flavonoids proanthocyanidins also called oligomeric proanthocyanids which has antiinflammatory and antioxidant. It neutralizes free radicals more effectively than vitamin C & E. Furthermore reduces histamine production to prevent or ease allergies, asthma, emphysema and sinusitis grape seed selectively inhibits receptor on endothelial cells so that advance glycation and products ages cannot bind them (Ma, et al.,2007). Considering all these beneficial factors the incorporation of grape seed into other products must be of most concern. The present day nutritionists should take special effort in inculcating the awareness and knowledge about grape seed the local community. They must introduce new grape seed incorporated food products in local market so that it would be made available to all new steps must be taken to undergo research about nutritive value of grape seed and to introduce it all community.

**Table – 1:**  
**Results of statistical analysis of scores given panel judges for the grape seed powder cookies versus plain cookies.**

| S.No | Groups                            | Mean ± SD                              |               | 't' test values | Level of significance |
|------|-----------------------------------|--|---------------|-----------------|-----------------------|
|      |                                   | Grape Seed Powder Incorporated Cookies | Plain Cookies |                 |                       |
| 1    | Semi-trained panel members (n=15) | 59.06 ± 8.14                           | 62.53 ± 7.88  | 1.11            | 1%                    |
| 2    | Un-trained panel members (n=15)   | 60.7 ± 6.26                            | 60.6 ± 3.38   | 0.51            | 1%                    |

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